



Advisory Note

GEN/9/1

The Thickness of Galvanized Coatings on Flame-Cut Edges

September 2001

When angle plates or other steel components are cut by an acetylene torch or a similar flame cutting apparatus the cut edges will, after having been hot dip galvanized, show a coating thickness which is lower than the thickness of the zinc coating on the adjoining surfaces.

Cutting at these high temperatures makes the steel surface or the cut edge less reactive due to the depletion of alloying elements at these areas. The formation of zinc/iron alloy layers during the galvanizing process will be reduced and these areas will, upon withdrawal from the zinc kettle, have a somewhat thinner coating.

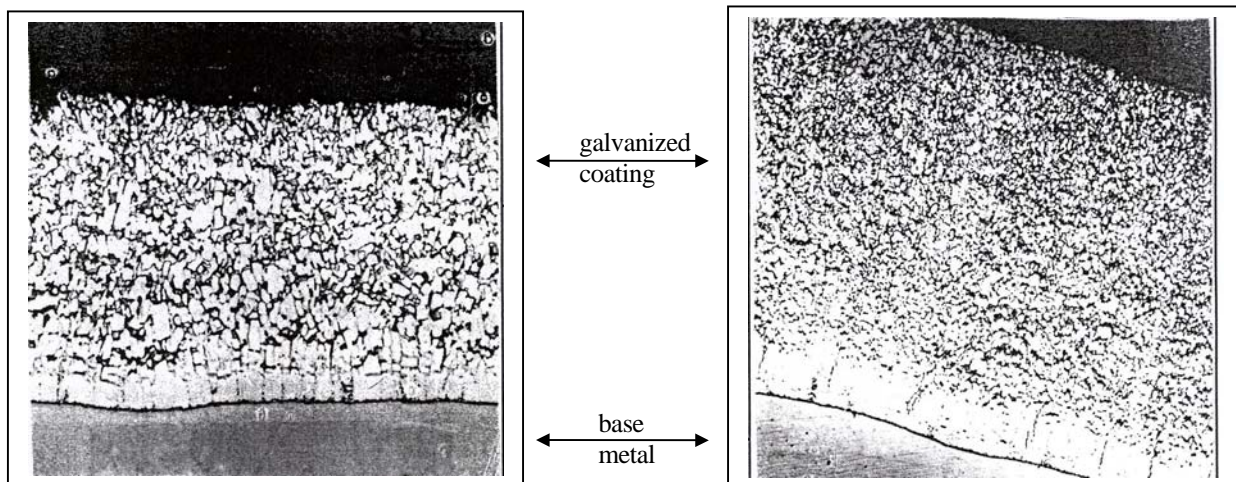
The effect is illustrated on the two accompanying micrographs (a) and (b). Micrograph (a) shows the thinner zinc coating on an edge of an 8 mm thick steel part. The crystalline structure of the underlying steel is far less pronounced than of the steel in micrograph (b).

Micrograph (b) shows the zinc coating, on one of the adjoining areas of this steel part, approximately 1 cm from the cut edge. The thickness there is approximately 100 um, whereas on the edge there is approximately 60 um thickness present.

Both micrographs have been enlarged 200 times

Micrograph (a) Coating on flame cut edge.

Micrograph (b) Coating on un-cut areas



Note: As flame cutting changes the steel composition and structure in the heat-affected zone, the coating thickness in this area may not meet the requirements of AS/NZS 4680:2006. In order to obtain the required coating thickness, flame cut surfaces should be ground off by the fabricator prior to galvanizing.

Reference: The Uneven Galvanizing of Flame-Cut Edges
Pasminco Research Centre Report TSP No TP06, 1990

This Advisory Note is intended to keep readers abreast of current issues and developments in the field of galvanizing. The Galvanizers Association of Australia has made every effort to ensure that the information provided is accurate, however its accuracy, reliability or completeness is not guaranteed. Any advice given, information provided or procedures recommended by GAA represent its best solutions based on its information and research, however may be based on assumptions which while reasonable, may not be applicable to all environments and potential fields of application. Due and proper consideration has been given to all information provided but no warranty is made regarding the accuracy or reliability of either the information contained in this publication or any specific recommendation made to the recipient. Comments made are of a general nature only and are not intended to be relied upon or to be used as a substitute for professional advice. GAA and its employees disclaim all liability and responsibility for any direct or indirect loss or damage which may be suffered by the recipient through relying on anything contained or omitted in this publication.

So long as no alterations are made unless approved, you are invited to reproduce the information contained in this advice provided acknowledgement is given that GAA is the source.